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EXAMINER	
HERNANDEZ, NELSON D	

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2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/693,901	SHIOMI, YASUHIKO	
	Examiner	**Art Unit**	
	Nelson D. Hernández Hernández	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24,26,30,31 and 35-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24,26,30,31 and 35-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/212,940.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 18, 2008 has been entered.

Response to Amendment

2. The Examiner acknowledges the amended claims filed on November 18, 2008. **Claims 24, 30 and 31** have been amended. **Claims 1-23, 25, 27-29, and 32-34** have been cancelled. **Claims 37-39** have been newly added.

Response to Arguments

3. Applicant's arguments with respect to **claims 24, 30 and 31** have been considered but are moot in view of the new grounds of rejection.

4. Applicant's arguments filed November 18, 2008 have been fully considered but they are not persuasive. The Applicant argues the following:

a. "Referring to Fig. 22 of the present application as re-produced below, one of the aspects of the present invention <u>generates a plurality of secondary images</u>

1702, 1703, 1704 out **of** the obtained image 1701 by shifting the pixels **of** the obtained image 1701 (i.e., an original image).

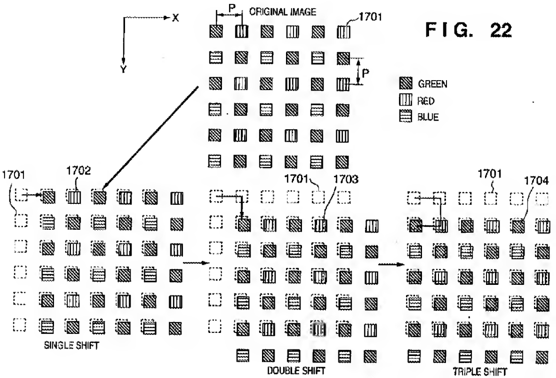

FIG. 22

For example, the first shift image 1702 has been shifted by one pixel pitch P from the original image 1701 in the X-direction, the second shift image 1703 has been shifted by p from the first shift image 1702 in the Y-direction, and the third shift image 1704 has been shifted by - P from the second shift image 1703 in the X-direction. In particular, amended claim 24 specifically recites that the shifting amount of the pixels in the secondary images corresponds to the comparison result between the spatial frequency characteristics of the color components (e.g., R, G, B) of the obtained image detected by the detector. See,

e.g., page 55, line 20 through page 58, line 20 of the specification as originally filed."

- The Examiner disagrees and would like to point out that the claims as now amended appear to be misinterpreted from what is disclosed in the specifications. As is discussed in the specifications, in regards to fig. 22 of the present application,

[Referring to FIG. 22, by decentering the optical unit 4 by a predetermined amount in the X-direction, the first shift image 1702, which has been shifted by one pixel pitch P **from** an initial image 1701 in the X-direction, is obtained. Furthermore, by decentering the optical unit 4 in the first shift state by a predetermined amount in the Y-direction, the second shift image 1703, which has been shifted by p **from** the first shift image 1702 in the Y-direction, is obtained. Moreover, by decentering the optical unit 4 in the second shift state by a predetermined amount in the X-direction, the third shift image 1704, which has been shifted by **-P from** the second shift image 1703 in the X-direction, is obtained.

In this way, by combining a total of four images, i.e., the initial image 1701 and three images shifted by predetermined pixel pitches from the initial image 1701 in units of frames, red and blue pixels can be evenly distributed in the X- and Y-directions, as shown in FIG. 23.]

It is shown that the generation of the first image 1702, the second image 1703, and the third image 1704 is performed by shifting the optical unit 4. When the descriptions recites that the first image 1702 has been shifted by one pixel pitch P **from** an initial image 1701 in the X-direction, means that the first image 1702 is obtained by moving the optical unit 4 by an amount with

respect to the position of the optical unit used to capture the initial image. A similar process occur to generate the second image 1703, which is obtained by moving the optical unit 4 a particular amount with respect to the position of the optical unit 4 when the first image 1702 was obtained. Also, the third image 1704 is obtained by moving the optical unit 4 a particular amount with respect to the position of the optical unit 4 when the second image 1703 was obtained. Thus the production of the first, second and third images is performed by moving the optical unit and capture said first, second and third images with the optical unit at different positions. The Examiner understands that the first, second and third images (1702, 1703, and 1704) are <u>not</u> obtained out of the obtained image 1701 by shifting the pixels of the obtained image 1701 as argued.

b. "Harada discloses an imaging apparatus adapted to pick up both a motion image and a still image. The Office Action indicates that the image shift mechanism 19 as shown in Fig. 1 is an equivalent structure to the shift unit of the present application. A relevant portion of Harada (e.g., col. 27, lines 58-67) discloses that the image shift mechanism shift the optical axis of the original image light emerging from the variable spatial filter 18 that causes a focal position of each monochromatic image light component to shift in the same

shifting direction. However, there is nothing in Harada that teaches a shifting unit that shifts the pixels of an initial image to generate a plurality of secondary images based on the comparison result of the spatial frequency characteristics of the color components of the initial image, as specifically required by the amended claims."

➢ The Examiner disagrees. As it is discussed in the specifications of the present application, the optical unit is a lens unit being controlled to capture a plurality of images that would later be combined to create a single image (See page 12, line 26 – page 13, line 18; page 58, lines 7-26). Also, as discussed in the previous Office Action, Harada et al. discloses a shift unit (Image shift mechanism 19 as shown in fig. 1), arranged to shift the plurality of images obtained by the imaging unit with respect to each other (Col. 27, lines 27-67; col. 38, lines 35-67; col. 39, line 17 – col. 40, line 11).

c. "Okada is cited as disclosing the detector of the present application but fails to teach the shifting unit of the present invention as discussed above. Applicant notes that Okada's optical shifting units 3, 4 as shown in Figs. 1 and 10 differ from the shifting unit of the present application, i.e., they fail to shift the pixels of the original image based on the comparison result of the spatial frequency characteristics of the color components of the initial image as required by the amended claims discussed above."

➢ The Examiner disagrees. As it was discussed above, the pixels of the original images are not shifted. The optical unit is the one being shifted in order to capture different images with respect to the original image that would later be combined to generate a single image. Furthermore, the teaching of Okada et al. was not presented to show the shift unit for generating the multiple images that would be combined. The shift unit to generate the plurality of images that would later be combined has been discussed in the Harada et al. reference. Okada et al. has been introduced to show the concept of having an imaging apparatus comprising correction means for correcting the influence of vibration on the apparatus using optical shift units (3 and 4 as shown in figs. 1 and 10), wherein a generation means (6 as shown in fig. 10) drives the optical shift units via the correction means to capture a plurality of images (Co. 7, lines 27-44; col. 12, lines 57-67; col. 13, lines 1-8), wherein, Okada et al. further discloses that the shifting of the lens is based on a measured amount of movement detected on the camera (Col. 7, lines 35-45). As discussed in the previous Office Action, the Examiner understands that since the imaging apparatus in Harada et al. is not firmly supported, but supported in an unstable fashion (i.e. at the user's hands) the images are shifted or moved by the vibration caused to the imaging apparatus in addition to the image shifting operation, thus causing deteriorated quality in a still or high definition image. Therefore, one of an ordinary skill in the art would find obvious to apply the teaching of Okada et al. to the teaching of Harada et al. to have a corrector, arranged to correct an influence of vibration on

said apparatus using said optical shifter and the generator driving said optical shifter via said corrector to capture said plurality of images used for generating said single image and to shift the lens according to the detected amount of movement in the camera with the motivation of optimizing the image processing method based on the detected movement amount, thereby obtaining a high-definition without being affected by the moving or vibration amount.

➢ In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

d. "Kaneda is cited as disclosing the concept of detecting movement of the camera based on a result of comparison between the spatial frequency. However, as Applicant understand it, Kaneda also fails to show or suggest the inventive aspects of the present application as discussed above."

➢ The Examiner disagrees. As discussed above, the combined teaching of Harada et al. in view of Okada et al. teaches the above discussed limitations. The Kaneda et al. reference has been introduced to teach the concept of detecting movement of the camera based on a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector. The Examiner understands that after acknowledging

the advantages that would provide the teaching of Okada et al., one of an ordinary skill in the art would have found obvious to at the time the invention was made to use the concept of detecting motion in an image based on a comparison of spatial frequency components of a plurality of color components of the image to adjust the position of a lens to reduce the blur in an image as taught in Kaneda to modify the teaching of Harada et al. and Okada et al. to have said shift amount made in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector with the motivation of performing shake correction in the image being captured thus reducing blur of the captured image as suggested by Kaneda (See Machine English Translation, page 2, ¶ 0007 – page 3, ¶ 0008).

5. The Examiner understands that the combined teaching of Harada et al. in view of Okada et al. and further in view of Kaneda as applied in the rejections of **claims 24, 26, 30, 31, and 35** under 35 USC § 103 are proper and therefore maintained.

6. In the previous Office Action **claim 35** was rejected using Official Notice to reject limitations as being well known in the art. Since Applicant failed to traverse the Examiner's assertion of official notice is taken to be admitted prior art. If the traverse was inadequate, the examiner should include an explanation as to why it was inadequate. See MPEP 2144.03 [R-6] (C).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 24, 26, 30, 31, and 35-39** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 24 recites the following:

> An imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, <u>a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a storage unit which stores the single image obtained by the generator in a storage medium</u>, said apparatus comprising:
>
> a detector, arranged to detect spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;
>
> a controller, arranged to designate the data format and control supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and
>
> <u>a shift unit, arranged to shift the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images,</u>
>
> wherein said shift unit changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison

between the spatial frequency characteristics of the plurality of color components of the image detected by said detector.

Claim 30 recites the following:

An imaging method for an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, <u>a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a storage unit which stores the single image obtained by the generator in a storage medium</u>, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

<u>shifting the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images</u>,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

Claim 31 recites the following:

A computer program product stored on a computer readable medium comprising computer program code, for executing imaging processing of an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, <u>a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a</u>

storage unit which stores the single image obtained by the generator in a storage medium, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

shifting the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

The Examiner would like to point out that **claims 24, 30, and 31** as now amended attempts to claim that the plurality of secondary images are obtained by shifting the pixels of the obtained image. It appears that **claims 24, 30, and 31** as now presented are claiming that the plurality of images are obtained from the obtained image data and not by capturing new image data that is obtained when shifting the optical unit (which appear to be a lens as discussed in the specifications of the present application) to different position and capturing an image at each of said positions. **Claims 24, 30, and 31** as now presented appear to be misinterpreted from what is disclosed in the specifications. As is discussed in the specifications (See page 58, lines 7-26), in regards to fig. 22 of the present application,

Referring to FIG. 22, by decentering the optical unit 4 by a predetermined amount in the X-direction, the first shift image 1702, which

has been shifted by one pixel pitch P **from** an initial image 1701 in the X-direction, is obtained. Furthermore, by decentering the optical unit 4 in the first shift state by a predetermined amount in the Y-direction, the second shift image 1703, which has been shifted by p **from** the first shift image 1702 in the Y-direction, is obtained. Moreover, by decentering the optical unit 4 in the second shift state by a predetermined amount in the X-direction, the third shift image 1704, which has been shifted by -P **from** the second shift image 1703 in the X-direction, is obtained.

In this way, by combining a total of four images, i.e., the initial image 1701 and three images shifted by predetermined pixel pitches from the initial image 1701 in units of frames, red and blue pixels can be evenly distributed in the X- and Y-directions, as shown in FIG. 23.

It is shown that the generation of the first image 1702, the second image 1703, and the third image 1704 is performed by shifting the optical unit 4. When the descriptions recites that the first image 1702 has been shifted by one pixel pitch P **from** an initial image 1701 in the X-direction, means that the first image 1702 is obtained by moving the optical unit 4 by an amount with respect to the position of the optical unit used to capture the initial image. A similar process occur to generate the second image 1703, which is obtained by moving the optical unit 4 a particular amount with respect to the position of the optical unit 4 when the first image 1702 was obtained. Also, the third image 1704 is obtained by moving the optical unit 4 a particular amount with respect to the position of the optical unit 4 when the second image 1703 was obtained. Thus the production of the first, second and third images is performed by moving the optical unit

and capture said first, second and third images with the optical unit at different positions. The Examiner understands that the first, second and third images (1702, 1703, and 1704) are <u>not</u> obtained out of the obtained image 1701 by shifting the pixels of the obtained image 1701 as argued.

Were **claims 24, 30, and 31** meant to recite that the plurality of secondary images are each obtained by shifting pixels from the obtained image by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions?

For examining purposes, limitations of **claim 24** will be read as follows:

> An imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels <u>from</u> ~~of~~ the obtained image <u>by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions</u>, and a storage unit which stores the single image obtained by the generator in a storage medium, said apparatus comprising:
>
> a detector, arranged to detect spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;
>
> a controller, arranged to designate the data format and control supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and
>
> a shift unit, arranged to shift the pixels ~~of~~ <u>from</u> the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shift unit changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector.

For examining purposes, limitations of **claim 30** will be read as follows:

An imaging method for an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels from ~~of~~ the obtained image by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions, and a storage unit which stores the single image obtained by the generator in a storage medium, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

shifting the pixels ~~of~~ from the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

For examining purposes, limitations of **claim 31** will be read as follows:

A computer program product stored on a computer readable medium comprising computer program code, for executing imaging processing of an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels <u>from</u> ~~of~~ the obtained image <u>by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions</u>, and a storage unit which stores the single image obtained by the generator in a storage medium, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

shifting the pixels ~~of~~ <u>from</u> the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

9. **Claims 26 and 35-39** are also rejected under 35 U.S.C. 112, first paragraph, as they depend from claims rejected under 35 U.S.C. 112, first paragraph.

10. Claims **24, 26, 30, 31, and 35-39** rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In regards to claims 24, 30, and 31,

Claim 24 recites the following:

> An imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, <u>a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a storage unit which stores the single image obtained by the generator in a storage medium</u>, said apparatus comprising:
>
> a detector, arranged to detect spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;
>
> a controller, arranged to designate the data format and control supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and
>
> <u>a shift unit, arranged to shift the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images,</u>
>
> wherein said shift unit changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector.

Claim 30 recites the following:

An imaging method for an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a storage unit which stores the single image obtained by the generator in a storage medium, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

shifting the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

Claim 31 recites the following:

A computer program product stored on a computer readable medium comprising computer program code, for executing imaging processing of an imaging apparatus having an imaging unit which forms an object image and generates an image by photoelectric conversion, a generator which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels **of** the obtained image, and a storage unit which stores the single image obtained by the generator in a storage medium, the method comprising the steps of:

detecting spatial frequency characteristics of a plurality of color components of the image obtained by the imaging unit;

designating the data format and controlling supply of an image to the storage unit in correspondence with the detected spatial frequency characteristics; and

shifting the pixels **of** the image obtained by the imaging unit thereby generating the plurality of secondary images,

wherein said shifting step changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected in said detecting step.

As discussed above (item 8), although the specifications of the present application discuss that the plurality of secondary images are obtained by shifting pixels from the obtained image by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions, the specifications do not appear to discuss that the plurality of secondary images are obtained **by shifting pixels of the obtained image** as recited in **claims 24, 30, and 31** as now presented. The Specifications do not appear to discuss obtaining the plurality of image by modifying image data of the originally obtained image.

11. **Claims 26 and 35-39** are also rejected under 35 U.S.C. 112, first paragraph, as they depend from claims rejected under 35 U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 24, 26, 30, 31, 35, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada et al., US Patent 6,108,036 in view of Okada et al., US Patent 6266086 B1 and further in view of Kaneda, JP 07-107369 A.

Regarding claim 24, Harada et al. discloses an imaging apparatus (Fig. 1) having an imaging unit (Fig. 1: 4), which forms an object image, and generates an image by photoelectric conversion, a generator (Fig. 1: 7) which generates a single image from the image obtained by the imaging unit and a plurality of secondary images each obtained by shifting pixels from the obtained image by adjusting the position of the optical unit with respect to the position of the optical unit, used to capture said obtained image, and capture said plurality of secondary images at said shifted positions (Col. 25, line 60 – col. 26, line 41; col. 27, lines 27-67; col. 38, lines 35-67; col. 39, line 17 – col. 40, line 11), and a storage unit (Image shift control 13 in conjunction with recording medium 9 as shown in fig. 1) which, and stores the image obtained by the generator in a storage medium (Fig. 1: 9), said apparatus comprising:

a controller (Fig. 1: 13), arranged to designate the data format and control supply of an image to the storage unit in correspondence with a detected photographic mode (Col. 24, line 43 – col. 26, line 16; col. 27, lines 26-67; col. 29, lines 22-30; col. 4, lines

47-55; col. 34, lines 9-27; col. 38, lines 29-67; col. 39, line 1 – col. 40, line 11; col. 42, lines 9-24; col. 15, lines 15-59; col. 50, line 49, line 49 – col. 51, line 17).

Harada et al. further discloses a shift unit (Fig. 1: 19), arranged to shift the pixels from the image obtained by the imaging unit thereby generating the plurality of secondary images (Col. 27, lines 27-67; col. 38, lines 35-67; col. 39, line 17 – col. 40, line 11).

Harada et al. does not explicitly disclose a detector, arranged to detect spatial frequency characteristics of the image obtained by the imaging unit; that said designation of said data format and said controlling supply of an image to the storage unit is performed in correspondence with a detected photographic mode and that said shift unit changes a shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector.

However, Okada et al. discloses an imaging apparatus comprising correction means (7, 8, 9 and 10 as shown in figs. 1 and 10) for correcting the influence of vibration on the apparatus using optical shift units (3 and 4 as shown in figs. 1 and 10), wherein a generation means (6 as shown in fig. 10) drives the optical shift units via the correction means to capture a plurality of images (Co. 7, lines 27-44; col. 12, lines 57-67; col. 13, lines 1-8). Okada et al. further discloses that the shifting of the lens is based on a measured amount of movement detected on the camera (Col. 7, lines 35-45).

Since the imaging apparatus in Harada et al. is not firmly supported, but supported in an unstable fashion (i.e. at the user's hands) the images are shifted of moved by the vibration caused to the imaging apparatus in addition to the image shifting operation, thus causing deteriorated quality in a still or high definition image, one of an ordinary skill in the art would find obvious to apply the teaching of Okada et al. to the teaching of Harada et al. to have a corrector, arranged to correct an influence of vibration on said apparatus using said optical shifter and the generator driving said optical shifter via said corrector to capture said plurality of images used for generating said single image and to shift the lens according to the detected amount of movement in the camera. The motivation to do so would have been to optimize the image processing method based on the detected movement amount, thereby obtaining a high-definition without being affected by the moving or vibration amount.

Although the combined teaching of Harada et al. in view of Okada et al. teaches shifting the lens based on a detected amount of movement of the camera, the combined teaching of Harada et al. in view of Okada et al. fails to teach that the shift amount of the pixels in each of the plurality of secondary images in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector.

However, Kaneda discloses the concept of detecting movement of the camera based on a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector. Kaneda discloses a camera (See fig. 1) comprising a lens moving mechanism (Fig. 1: 133) that adjust the

position of the lens based on a motion detected, wherein said motion is detected based on an effective spatial frequency component of an image being captured to obtain the motion vectors between images (This teaches that the movement of the lens is based on a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector) (See Machine English Translation, page 3, ¶ 0008, page 4, ¶ 0012; page 5, ¶ 0018 – page 7, ¶ 0025; page 8, ¶ 0028-0031).

Therefore, taking the combined teaching of Harada et al. in view of Okada et al. and further in view of Kaneda as a whole, it would have been obvious to one of an ordinary skill in the art at the time the invention was made to use the concept of detecting motion in an image based on a comparison of spatial frequency components of a plurality of color components of the image to adjust the position of a lens to reduce the blur in an image as taught in Kaneda to modify the teaching of Harada et al. and Okada et al. to have said shift amount of said pixels in each of the plurality of secondary images made in correspondence with a result of comparison between the spatial frequency characteristics of the plurality of color components of the image detected by said detector. The motivation to do so would have been to perform shake correction in the image being captured thus reducing blur of the captured image as suggested by Kaneda (See Machine English Translation, page 2, ¶ 0007 – page 3, ¶ 0008).

Regarding claim 26, the combined teaching of Harada et al. in view of Okada et al. and further in view of Kaneda as discussed and analyzed in claim 24 teaches that said detector detects high-frequency components of the plurality of color components for the image obtained by the imaging unit (See Harada et al., col. 42, lines 52-64).

Regarding claim 30, claim 30 is a method claim of the apparatus in claim 24. Limitations have been discussed and analyzed in claim 24.

Regarding claim 31, Harada et al. in view of Okada et al. and further in view of Kaneda as discussed and analyzed in claims 24 and 30 further teaches a computer program product comprising stored on a computer readable medium comprising computer program code for executing the imaging processing of the imaging apparatus in claims 24 and 30 (Harada et al. inherently discloses said computer program product comprising stored on a computer readable medium comprising computer program code for executing the imaging processing of the imaging apparatus in control circuit 13 as shown in fig. 1). Grounds for rejecting claim 24 apply here.

Regarding claim 35, the combined teaching of Harada et al. in view of Okada et al. and further in view of Kaneda teaches that each of color pixels of the imaging unit corresponds to one of the plurality of color components (See Harada Fig. 18; col. 44, lines 21-56) but fails to teach that resolutions of the pixels corresponding to the plurality of color components are not the same.

However, Official Notice is take that the concept of having each of pixels of the imaging unit corresponds to one of the plurality of color components in such a manner that resolutions of the pixels corresponding to the plurality of color components are not the same is notoriously well known in the art, an example of that is the Bayer color pattern wherein the colors related to luminance (i.e. green) has twice the resolution of the blue and red colors in the color array. Therefore, it would have been obvious to one of an ordinary skill in the art at the time the invention was made to modify the teaching of Harada et al., Okada et al. and Kaneda to use the pixels in the imaging unit with the plurality of pixels receiving light of a plurality of colors arranged as a Bayer pattern wherein the amount of green colors is twice as the amount of blue or red colors respectively. The motivation to do so would have been to allow full color reproduction of the captured image taking in consideration the luminance dominance components of the image.

Regarding claim 37, The Examiner noted that **claims 37** is presented using the phrase "**configured to**" in the limitations.

It is noted by the Examiner that the term "**configured to**" is non-limiting and therefore has not been given patentable weight during examination of the claims on their merits. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. MPEP §2106.

The subject matter of a properly construed claim is defined by the terms that limit

its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:

(A) statements of intended use or field of use,

(B) “adapted to” or “adapted for” clauses,

(C) “wherein” clauses, or

(D) “whereby” clauses.

This list of examples is not intended to be exhaustive. See also MPEP § 2111.04. USPTO personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted “in view of the specification” without importing limitations from the specification into the claims unnecessarily). In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550- 551 (CCPA 1969). See also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope

and breadth of language explored, and clarification imposed.... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.").

The combined teaching of Harada et al. in view of Okada et al. and further in view of Kaneda as discussed and analyzed in claim 24 further teaches a combining unit (In Harada et al., see interpolative synthesizer circuit 7 as shown in figs. 1, 22 and 23) configured to combine the image obtained by the imaging unit and the plurality of secondary images thereby generating the single image (Note that the interpolative synthesizer circuit in Harada et al. is operable to combine the image obtained by the imaging unit and the plurality of secondary images thereby generating the single image as claimed. See Harada et al., col. 25, line 60 – col. 26, line 41; col. 27, lines 27-67; col. 38, lines 35-67; col. 39, line 17 – col. 40, line 11). Grounds for rejecting claim 24 apply here.

Regarding claim 38, limitations have been discussed and analyzed in claim 37.

Regarding claim 39, limitations have been discussed and analyzed in claim 37.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernández Hernández whose telephone number is (571)272-7311. The examiner can normally be reached on 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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